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FEDERAL COMMUNICATIONS COMMISSION
OFFICE OF THE SECRETARY

STATE OF CONNECTICUT LEGISLATURE

in the proposal.¹ The Associated Public-Safety Communications Officers, Inc. ("APCO") supports the proposal for the Public Safety Pool frequencies, excluding the channels covered by the Public Safety "Regional Plans".

Although the American Mobile Telecommunications Association, Inc. ("AMTA") supports the concept of the proposal, AMTA requests that the Commission not adopt the rule change until such time as the Commission changes its current waiver standard for SMR Pool frequencies.² However, AMTA's request is not germane to this proceeding. In this proceeding, NABER has requested that the Commission amend its **rules** relating to the separations of General Category and Business Pool channels. The proposal does not relate to **waivers**. Since the Commission's **rule** for separations less than seventy (70) miles for the SMR Pool is 40/22 dB μ , NABER has proposed that the **rule** for the other 800/900 MHz Pools be similarly amended.³ The Commission may elect to permit 40/30 dB μ separations for General Category and Business Pool **waivers**, however the **rule** for separations should be amended to require 40/22 dB μ separations.

In addition, AMTA suggests that the Commission adopt a "short-spacing chart" for the non-SMR Pools, similar to Section

¹See, for example, the Comments of Commonwealth Edison Company ("CECO"); Southern California Edison Company ("SCE"); New England Power Company ("NEPSCO"); and Northern States Power Company ("NSP").

²AMTA Comments at 2.

³As the Commission is aware, NABER proposed in PR Docket No. 90-34 that the Commission utilize the 40/22 dB μ separation standard for SMR Pool waivers. However, the Commission has elected to retain the 40/30 dB μ standard for **waivers** in the SMR Pool.

90.621(b)(4). It is AMTA's belief that such a chart "... would simplify and therefore accelerate the coordination process..."

The chart was created by the Commission for administrative convenience, allowing the Commission to routinely grant applications which meet the chart's separation standard without the need to send the application through engineering review in the Commission's Technical Section in Gettysburg, Pennsylvania. Although the short-spacing chart provides a useful reference point for simple system separations, it is NABER's request that the Commission leave to the coordinator's discretion whether the chart should be used in specific circumstances. In this manner, the coordinator will be able to consider the existing station's actual operating parameters, without the need to assume that the existing station is operating at 1000 watts ERP at 1000 feet HAAT, which would overprotect certain stations and underprotect stations on mountain top sites. NABER's position is supported by many of the parties commenting in this proceeding.⁴

Finally, several Special Industrial interests suggest that the previously utilized R-6602 curves not be utilized in certain regions of the country.⁵

In PR Docket No. 90-34, NABER discussed in its filings and during meetings with other associations propagation methods which

⁴See, for example, the Comments of the Special Industrial Radio Service Associations, Inc. ("SIRSA") at 5; CECO at 5; SCE at 5; and NSPC at 4.

⁵CECO at 5; SCE at 5; NSPC at 5-6; Southern California Gas Company ("SOCAL") at 5.

could be used for short-spacing. It was at that time NABER's opinion that any analysis method adopted must: (1) permit short-spacing where appropriate; (2) provide applicants and licensees with a reasonable idea as to the areas where existing systems should be protected; (3) be easily verified by the Commission; and (4) not result in a "battle of the engineers" resulting from the differences in assumptions that can be utilized for many engineering programs. NABER continues to believe that these standards should be applied to any new proposal to utilize other propagation methods.

It is the suggestion of SOCAL and SCE that the Commission should utilize the "Longley-Rice" method of predicting propagation. However, there are significant problems with this method for determining proper station separations.

First, since the definition of interference is a 10 dB D/U ratio, the use of a 40/22 dB μ standard using the Longley-Rice method would not be proper. In the use of R-6602 curves, the Commission has elected to utilize the 40/22 dB μ standard for non-waiver applications in order to account for the lack of terrain analysis through the use of average HAAT, providing a 8 dB "buffer" to correct for terrain anomalies, as for example the 50 meter terrain roughness assumption discussed by SIRSA at page 5 of its Comments.⁶ However, the Longley-Rice propagation model accounts for terrain roughness, therefore no buffer is necessary. Thus, the

⁶Short-Spacing Order at n. 40.

Commission should only consider a 40/30 dB μ contour study under the Longley-Rice criteria.

While the Longley-Rice calculation method may be effective to predict where a signal may be received, it does not demonstrate areas where the Commission should provide interference protection. Specifically, in areas where there is particularly higher or lower terrain, the Longley-Rice study shows a signal (or lack of a signal) at that particular point. These "pockets" of terrain irregularity may mean that a reliable signal can be received sixty (60) miles away from the transmitter.⁷ However, these "pockets" do not demonstrate where systems should be protected from interfering stations. The use of a Longley-Rice study could only be used to demonstrate singular points at which a signal can be received, not where stations should be protected.

The Commission has used the R-6602 curves to provide guidance as to the areas where protection should be provided. Although the R-6602 curves may not demonstrate the actual signal to be received at a certain point (using only averages), the curves do provide the Commission with an analysis as to the spacings which are appropriate between co-channel stations.

In Docket No. 18262, wherein the Commission established the 800/900 MHz private land mobile radio service, the Commission

⁷In one case, SCE has used a Longley-Rice study to demonstrate to the Commission that there is a "pocket" of 40 dB μ F(50,50) signal 69 miles away from its low power San Onofre station (a site mentioned in its Comments), and a "pocket" of a 30 dB μ F(50,10) signal from a co-channel station 186 miles from the station, which would require separation between the two stations of 255 miles. See FCC File No. 579416.

stated its objective to provide a high quality signal to 50 percent of the locations, 50 percent of the time. Based upon the Commission's analysis of receiver sensitivity, etc., the Commission defined the desired service area of 800/900 MHz Systems as the 40 dB μ F(50,50) contour derived through the use of R-6602 curves. Thus, the 40 dB μ contour protected by the Commission is an **average** of the actual values calculated by the program, defining a point along a radial at which one half of the locations receive a reliable signal one half of the time, and one half of the locations do not receive a signal one half of the time.

The Longley-Rice methodology does not provide an analysis of the 40 dB μ contour based upon the same criteria as that used by the Commission. Specifically, while the Commission protects stations based upon 50 percent **reliability**, the Longley-Rice program does not average the locations where 50 percent receive a signal and 50 percent do not. Rather, the program shows exactly where a 50 percent reliability signal can be achieved, regardless of surrounding points. R-6602 curves **average** these locations, thereby defining a protection distance. Thus, the Longley-Rice program takes into account only one of the two factors used by the Commission. Thus, an R-6602 analysis and a Longley-Rice analysis are not comparable. At best, the only way to compare the two methodologies, if any comparison can be drawn, would be to perform calculations using the Longley-Rice program at 90 percent reliability, which is typically used in the land mobile industry as defining a reliable signal.

SIRSA criticizes R-6602 curves because the curves use a 50 meter terrain roughness assumption, and in some areas the terrain is relatively flat. However, the Commission's adoption of a 40/22 dB μ standard in PR Docket No. 90-34 was based upon the Commission's review of NABER's analysis (based upon its consultation with radio manufacturers and SMR operators) that while a 40/23 dB μ standard would ordinarily be sufficient, an additional 1 dB protection was necessary to account for terrain roughness differences and differences in terrain analysis programs produced by various companies.⁸ Thus, the terrain roughness issue has already been taken into account in the 40/22 dB μ analysis.

NABER believes that any failure of R-6602 curves to define adequate protection areas in Southern California (or other areas of significant terrain) may be the result of the parameters used in the calculations. Specifically, many applicants have utilized the **average** HAAT for the stations for the relevant calculations. However, as discussed by NABER in PR Docket No. 90-34, the use of average HAAT can lead to contour calculations with no relation to the actual operating environment. In many areas of the country, antenna sites are located in areas which are characterized by irregular terrain. In some cases, the transmitter site is actually on the side of a mountain. Thus, the height above average terrain of the antenna may be several thousand feet in one direction, and several thousand feet below average terrain in the other direction.

⁸Report and Order, PR Docket No. 90-34, 56 FR 41502 (August 21, 1991 at para. 14.

Using a composite HAAT would therefore reduce (average down) the HAAT, thereby reducing (or increasing, depending on direction) the necessary mileage separation.

Reviewing contours along the co-channel radials, instead of using the average, may reveal that while a 50 mile spacing is more than sufficient along one radial where the HAAT is -2000 feet, in the direction of another radial where the HAAT is 1046 feet, there would be a significant overlap of the contours. Clearly, in this direction the short-spacing would cause harmful interference.

On this basis, NABER believes that use of co-channel radial HAAT will correct most deficiencies with the use of R-6602 curves. Further, NABER believes that it would be appropriate in the states of California, Nevada, Washington, Oregon, Utah, Colorado and Idaho to require the use of 3-second terrain data instead of the usually accepted 30-second data. This will lead to more accurate results in calculating signal contours in areas of severe terrain.

III. CONCLUSION

WHEREFORE, the National Association of Business and Educational Radio, Inc. respectfully requests that the Commission adopt a Notice of Proposed Rule Making and amend Sections 90.621(c) and (d) of its rules consistent with this Petition.

Respectfully submitted,

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AND EDUCATIONAL RADIO, INC.

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CERTIFICATE OF SERVICE

I, Ruth A. Buchanan, a secretary in the law office of Meyer, Faller, Weisman and Rosenberg, P.C., hereby certify that I have on this 27th day of August, 1992, sent copies of the foregoing Reply Comments via first class mail, postage prepaid, to the following:

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